CLAIMS

1. A sample support plate with a flat surface for mass spectroscopic analysis of biomolecules with ionization by matrix-assisted laser desorption and ionization and with hydrophilic anchor regions on an otherwise hydrophobic or lyophobic surface, wherein areas with affinity adsorbents for the biomolecules to be analyzed are located adjacent to the hydrophilic anchor regions.

2. A sample support plate according to claim 1, wherein the areas with affinity adsorbents form rings around the hydrophilic anchor regions, and are themselves surrounded by the hydrophobic layer of the sample support plate.

3. A sample support plate according to claim 1, wherein the size and form of the sample support plate is similar to that of a microtiter plate and wherein the hydrophilic anchor regions form an array corresponding to the basic quadratic array of 9 millimeters for individual microwells of a microtitration plate or a finer array arising from that by division by an integer number.

4. A sample support plate according to claim 1, wherein non-selective affinity adsorbents are used for purifying biomolecular mixtures.

5. A sample support plate according to claim 4, wherein covalently surface-bound alkane chains are used as affinity adsorbents.

6. A sample support plate according to claim 1, wherein bioselective affinity adsorbents are used for screening and purification of specific groups of biosubstances.

7. A sample support plate according to claim 1, wherein the hydrophilic anchor areas are accompanied by affinity areas of different biospecificity.

8. A sample support plate according to claim 7, wherein the size and form of the sample support plate has the shape of a small strip.

9. A sample support plate according to claim 8, wherein there are only a number of 3 to 10 anchor areas with accompanying affinity areas of different biospecificity on the strip.

10. A method for manufacturing a sample support plate according to claim 1, wherein the sample support plate is manufactured initially with a hydrophilic, flat surface, and coated with lyophobic and affinity adsorption layers after imprinting the surfaces to be not coated with a resoluble printing dye.

11. A method according to claim 10, wherein imprinting is carried out with a silk-screen printing procedure.

12. A method according to claim 10, wherein imprinting is carried out by an ink jet printer.

13. A method for loading purified biomolecules from largely unpurified analytical biosample solutions to a sample support plate for a subsequent mass spectroscopic analysis with ionization by matrix-assisted laser desorption and ionization (MALDI), comprising the following steps:
(a) providing a sample support plate with affinity adsorption areas each adjacent to a hydrophilic anchor area on an otherwise strongly hydrophobic plate surface,
(b) exposing the affinity adsorption areas to analytical sample solutions containing the biomolecules, thereby adsorbing the biomolecules to be analyzed,
(c) washing the sample support plate including the adsorbed biomolecules,
(d) desorbing the adsorbed biomolecules by an eluant solution which also contains matrix substance, and
(e) drying the eluant solution, thereby forming matrix crystals containing desorbed biomolecules on the hydrophilic anchor areas.

14. A method according to claim 13, wherein in step (a) a sample support plate with adsorption areas of different biospecificities is provided, and wherein, in the exposing step (b), the sample support plate is completely immersed in the analytical sample solution to adsorb different types of biomolecules on different adsorption areas.

15. A method according to claim 13, wherein in step (b) the affinity adsorption areas are exposed to the analytical sample solution by application of drops of the analytical sample solution larger in size than the hydrophilic anchor areas, so that the drops on the sample support plate overlap with the affinity adsorption areas.

16. A method according to claim 13, wherein the matrix substance is loaded onto the hydrophilic anchor areas between steps (c) and (d), and partially re-dissolved in step (d).

17. A method according to claim 13, wherein the affinity adsorption areas on the sample support plates provided in step (a) form rings around the hydrophilic anchor areas.

18. A method according to claim 13, wherein the eluant solution applied in step (d) is an organic solvent with a small part of water.